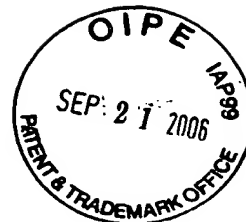




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System and Method for Providing Output

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[Title of the Invention] SYSTEM AND METHOD FOR PROVIDING
OUTPUT

[Claims]

[Claim 1]

An output providing system for providing a tangible output in response to a request from a customer, the system comprising:

a wireless data transmitter capable of generating and transmitting output-related data;

a wireless data receiver capable of directly receiving the data transmitted from the wireless data transmitter; and

an output producing device that produces the output based on the data received by the wireless data receiver.

[Claim 2]

The output providing system according to claim 1, wherein the wireless data transmitter and the wireless data receiver are connected using a wireless short-range data communication technique.

[Claim 3]

An output providing method for providing a tangible output in response to a request from a customer, the method comprising the steps of:

generating output-related data;

transmitting over the air the generated output-related data;

directly receiving in a data receiver the data transmitted over the air; and

producing the output, based on the received data, using an output producing device.

[Detailed Description of the Invention]

[0001]

[Technical Field]

The present invention relates to a system and method for providing a tangible output, such as a stamp and a name card, in response to a request from a customer.

[0002]

[Prior Art]

In recent years, amusement facilities, such as a game arcade and an amusement park, are often provided with a name card producing device that produces a name card on which personal information including a customer's name and address is printed, a stamp producing device that produces a stamp by engraving an image on a stamp material based on personal information, and a sticker producing device that produces a peel-off sticker based on image data obtained by taking a picture of a customer's face. Such devices are increasingly popular because, in many of such devices, an original cartoon character of the amusement park or a commonly popular cartoon character can be printed or engraved together with the personal information, and because a name card and a stamp are provided in a short time and at low cost.

[0003]

[Problems to be Solved in the Invention]

Under present circumstances, when a customer uses the above-described card or stamp producing device, the customer must go to a site where a desired device is installed and operate the device to enter data, or fill out a predetermined order form and submit it to an administrator of the device.

[0004]

However, going to the installation site of a desired device is troublesome for the customer. In addition, it is relatively time-consuming to enter data into the desired device or fill out an order form. When many customers queue up for the desired device, they must wait for their own turn. Thus, a drawback of such a device is that it takes a very long time to get a desired name card

or the like. Another drawback of such a system is that when the customer fills out an order form, the device manager must take the trouble to enter data based on the items entered in the order form.

[0005]

Accordingly, it is an object of the present invention to provide an output providing system and method that enables a customer to order a tangible output, such as a name card or a stamp, at less expense in time and trouble and that can save an output provider time and trouble.

[0006]

[Means for Solving the Problems]

To achieve the above-described object, an output providing system according to claim 1 includes, in order to provide a tangible output in response to a request from a customer, a wireless data transmitter capable of generating and transmitting output-related data, a wireless data receiver capable of directly receiving the data transmitted from the wireless data transmitter, and an output producing device that produces the output based on the data received by the wireless data receiver.

[0007]

An output providing method according to claim 3 includes, in order to provide a tangible output in response to a request from a customer, the steps of generating output-related data, transmitting over the air the output-related data, directly receiving in a data receiver the data transmitted over the air, and producing the output, based on the received data, using an output producing device.

[0008]

According to claims 1 and 3, when a customer wants a desired output to be produced, all the customer has to do is to send desired data using a personal wireless data transmitter without taking the trouble to go to the

installation site of the output producing device and enter data to be indicated in the output or fill out a form. Accordingly, the time and trouble taken by the customer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the customer substantially saves an output provider the trouble of entering data.

[0009]

Because the range that permits communication between the wireless data transmitter and the wireless data receiver is limited to a relatively short range, the operator of the wireless data transmitter must go to a location close to the wireless data receiver to order an output. Thus, value can be added to the output produced by the output producing device

[00010]

Because the output-related data is generated and transmitted using the wireless data transmitter, the customer can order an output conveniently from various locations, at home and away from home, in his/her spare time.

[0011]

Furthermore, the data transmitted from the wireless data transmitter bypasses a base station or a general line and is directly received by the wireless data receiver. Accordingly, the cost of communication between wireless data transmitter and the wireless data receiver can be significantly reduced.

[0012]

In addition, the output providing system of claim 2 is characterized in that the wireless data transmitter and the wireless data receiver are connected using a wireless short-range data communication technique. For example, Bluetooth may be used as the wireless short-range data communication technique.

[0013]

[Embodiment]

A preferred embodiment of the invention will now be described with reference to the accompanying drawings.

[0014]

According to the embodiment of the invention, a stamp providing system is provided which produces a stamp from a thermoplastic porous material in response to a request from a customer. Referring now to FIG. 1, a general configuration of the stamp providing system according to the embodiment will be described. FIG. 1 is a schematic block diagram of the stamp providing system according to the embodiment.

[0015]

In the stamp providing system 1 shown in FIG. 1, a stamp producing device 19 located within a relatively short range from a number of consumers (customers) (only four consumers 11a-11d are shown here by way of example) produces a stamp 20, based on stamp producing data transmitted over the air using a wireless short-range data transmission technique (such as Bluetooth) from cellular phones 12a-12d, which are portable wireless data receivers/transmitters owned by the respective consumers. The cellular phones 12a-12d used in this embodiment have, in addition to a function of receiving/transmitting voice as digital (or analog) signals, a function of receiving/transmitting textual information as code data from/to other computers and cellular phones that adopt the same wireless short-range data transmission technique.

[0016]

The textual information sent from the cellular phones 12a-12d is sent to a host computer 18 connected to the stamp producing device 19. The text data contains data to be engraved on a stamp material of the stamp 20. The data containing text data and sent from the cellular phones 12a-12d as digital signals is directly received by

the host computer 18, which adopts the same wireless short-range data transmission technique as that adopted by the cellular phones 12a-12d.

[0017]

In this embodiment, a wireless short-range data communication technique is adopted as a data communication interface between the cellular phones 12a-12d and the host computer 18. This allows only cellular phones located within a relatively short range from the host computer 18 to communicate with the host computer 18. For example, when Bluetooth using a career frequency band of 2.4 GHz is adopted as the wireless short-range data communication technique, only cellular phones located within approximately 10 m from the host computer 18 can communicate with the host computer 18. Thus, in the case of FIG. 1, the cellular phones 12a, 12b, 12c can transmit data to the host computer 18, but the cellular phone 12d cannot do so. The adoption of Bluetooth advantageously enables high-speed data transmission between cellular phones and the host computer at approximately 1M bit/second even when there is an obstruction therebetween.

[0018]

The host computer 18, as will be described in detail later, edits stamp face data for producing a stamp, based on the contents of the received data. The edited data is sent to the stamp producing device 19. The stamp producing device 19 optically engraves an image on a stamp material based on the data sent from the host computer 18 and produces the stamp 20 having a desired stamp face.

[0019]

In this embodiment, each cellular phone 12a-12d constitutes a wireless data transmitter, the host computer 18 constitutes a wireless data receiver, and the

host computer 18 and the stamp producing device 19 constitute an output producing device.

[0020]

Referring now to FIGS. 2 and 3, the structure of the stamp producing device will be described. FIG. 2 is a general perspective view of the stamp producing device shown in FIG. 1, and FIG. 3 is a general cross-sectional view thereof. The stamp producing device 19 has a film magazine 24 removable from a device body 22 and storing a plurality of transparent original films 23, a supply port 25 disposed near the film magazine 24 for supplying cut sheets CS for stamp ID labels, a print unit 27 provided with a printhead 26, a stamp unit 29 for forming a stamp face, based on a printed original film 23, on a stamp material (not shown) disposed at a lower surface of the stamp body 28, a stamp storage 30 for storing the stamp body 28 during stamp face forming, and a discharge port 31 disposed near the stamp unit 29 in the device body 2 for discharging the cut sheets CS and the original films 23.

[0021]

A head holder unit 32, provided on an upper surface of the print unit 27, has at its lower side a thermal head 26 and is upwardly pivotable about a shaft 33, thereby allowing maintenance of the inside of the device. A leading edge of the uppermost original film 23 on the film magazine 24 is pressed into contact with a supply roller 34. When the supply roller 34 is rotated in this state, the original film 23 is properly fed to the print unit 27. The cut sheet CS is fed to a position printable by the thermal head 26 by a pair of feed rollers 35, 36 immediately behind the supply port 25, a sheet guide 37 provided immediately behind the supply port 25 so as to be bent toward the thermal head 26, and a guide rail 38.

[0022]

The print unit 27 is provided with a supply roll 40 and a take-up roll 40b of thermal transfer ribbon 39 covered with wax base ink. A platen 42 is provided below the thermal head 26 disposed at the lower side of the head holder unit 32. Provided below the supply roll 40a are the guide rail 38 for guiding the original film 23 and the cut sheet CS to a space between the thermal head 26 and the platen 42, and a presser guide 43 for preventing the original film 23 and the cut sheet CS from floating while being fed. In addition, provided downstream of the thermal head 26 are a transport guide 44 and a pair of supply rollers 45.

[0023]

A light-emitting unit (HU) 49 provided with a xenon tube 48 enclosed by a reflector box 47 is removably provided below the stamp unit 29. The light-emitting unit 49 with a stage 50 for holding thereon the stamp body 28 is removable from the stamp producing device 19 by upwardly sliding a slide lever 51. The stamp unit 29 is also provided with a top cover 52 and a front top cover 53, which are opened/closed for replacement of the stamp body 28.

[0024]

The stamp producing device 19 is connected to the host computer 18 via a cable and executes, under the control of the host computer 18, various operations, such as printing a positive image on the original film 23, printing an ID label on the cut sheet CS, and engraving an image on a stamp material based on the original film 23 with a positive image printed thereon.

[0025]

More specifically, the thermal head 26 prints a positive image composed of predetermined letters or the like on the original film 23, which has been fed from the film magazine 24 to the print unit 27, and the printed original film 23 is fed to the stamp unit 29. Then the

light-emitting unit 49 irradiates the stamp material disposed under the stamp body 28 with light through the original film 23 to engrave the image on the stamp material. In this way, a series of stamp producing operations by the stamp producing device 19 is completed.

[0026]

For printing on the cut sheet CS, a positive image including letters and graphics is printed by the thermal head 26 on the cut sheet CS fed from the supply port 25, instead of the original film 23, and the printed cut sheet CS is discharged from the discharge port 31. The cut sheet CS may be pasted to the stamp body 28 as an ID label.

[0027]

The structure of a stamp material disposed under the stamp body 28 will now be described. The stamp material used in this embodiment has a double-layer structure, as disclosed in Japanese Laid-Open Patent Publication No. 11-78191, which belongs to the applicant of the present invention. The lower layer is made of a soft porous resin (such as urethane resin) in which a light energy-absorbing material, such as carbon black, is dispersed. The upper layer is made of a hard porous resin (such as polyvinyl formal) in which ink is stored and to which a uniform pressure is applied.

[0028]

Upon selective irradiation of such a stamp material, when it is compressed, with light via the transparent (positive) original film with a positive image printed thereon, a portion in the lower layer, which corresponds to a transparent portion of the original film, is melted by heat generated from the light energy-absorbing material and then hardened and sealed as an ink unpermeable portion. On the other hand, a portion in the lower layer corresponding to a printed portion of the original film is not irradiated with light nor

melted/hardened by heat transmitted from the printed portion, and remains unsealed corresponding to the letters or the like on the original film. As a result, a stamp having, on the lower surface of the stamp material, a desired pattern composed of a sealed portion (not to be printed) and an unsealed portion (to be printed) is formed.

[0029]

Referring now to FIG. 4, a control system of the stamp providing system 1 according to the embodiment will be described. FIG. 4 is a block diagram showing a control system of the stamp providing system 1. In FIG. 4, only one (cellular phone 12a) of a number of cellular phones usable in the stamp providing system in the embodiment is representatively shown.

[0030]

As shown in FIG. 4, the cellular phone 12a has a CPU 61, a ROM 62, a RAM 63, a DSP (digital signal processor) 64, a wireless unit controller 65, and an I/O interface 66. These devices are connected to each other using a bus 67. The ROM 62 is a rewritable nonvolatile solid-state memory, such as a flash memory, for storing a cellular phone operation program, a kana-kanji conversion program, and other programs. The RAM 63 is a volatile solid-state memory for storing text data and messages composed by a consumer.

[0031]

The DSP 64 is a voice processor connected to a microphone 68 and a speaker 69 via an A/D and D/A converters (not shown). The wireless unit controller 65 controls operation of a wireless unit 70 connected thereto based on signals from the CPU 61. The wireless unit 70 is structured in conformity with the short-range wireless data transmission standards, such as Bluetooth, and transmits over the air desired voice data and text data, as digital signals, from an antenna 71 to an

antenna 78 of the host computer 18. Conversely, the wireless unit 70 is also used to directly receive data transmitted from the host computer 18 via the antenna 71.
[0032]

Connected to the I/O interface 66 are an operation unit 72 including numeral keys and a call key, and a display 73 on which numerals and letters inputted from the operation unit 72 or received by the wireless unit 70 are displayed. By operating the operation unit 72, an operator of the cellular phone 12a can create an arbitrary letter string including kana, kanji, numerals, and symbols. Then data of the created letter string as well as an identifier used for identifying an individual cellular phone (for example, a phone number of the cellular phone 12) is directly transmitted to the host computer 18.

[0033]

The host computer 18 has a CPU 81, a ROM 82, a RAM 83 and an I/O interface 84. These devices are connected to each other using a bus 85. Connected to the I/O interface 84 are a wireless unit controller, a hard disk 86, a keyboard 87, and a display 88.

[0034]

The wireless unit controller 76 controls operation of a wireless unit 77 connected thereto based on signals from the CPU 81. The wireless unit 77 is structured in conformity with the short-range wireless data transmission standards, such as Bluetooth, as in the wireless unit 70 of the cellular phone 12a. The wireless unit 77 receives data transmitted from the cellular phones 12a-12d via the antenna 78. Conversely, the wireless unit 77 is also used to transmit over the air desired voice data and text data, as digital signals, from the antenna 78 to the cellular phones 12a-12d.

[0035]

The display 88 displays a screen for editing e-mail received from one or more cellular phones, a stamp face generating screen including a stamp face image to be engraved by the stamp producing device 19, and other screens. The keyboard 87 is connected as part of an input device and, other than the keyboard 87, a pointing device such as a mouse may be connected.

[0036]

The hard disk 86 magnetically stores a mail editing program for editing mail received from the cellular phones, a program for exchanging data with the stamp producing device 19, and other programs. The RAM 83 temporarily stores programs read from the hard disk 86, received mail, and data entered from the keyboard 87. The RAM 83, as will be described later, is provided with name buffers 0-2, address buffers 0-2, a stamp type buffer, and a memory area for various pointers.

[0037]

The stamp producing device 19 is provided with a CPU 91, a ROM 92, a RAM 93, and an I/O interface 94, and these devices are connected to each other using a bus 95. The I/O interface 94 is connected to the I/O interface 84 of the host computer 18 via a cable or the like. This allows the stamp producing device 19 to retrieve stamp face data edited according to the embodiment from the host computer 18. Also connected to the I/O interface 94 are a head driving circuit 96 and a motor driving circuit 97. A thermal head 26 is connected to the head driving circuit 96, while motors 98 variously located at the stamp producing device 19 for driving the thermal head 26 and various rollers are connected to the motor driving circuit 97.

[0038]

The ROM 92 stores a control program for controlling the entire operation of the stamp producing device 19. The RAM 93 stores stamp producing data provided from the

host computer 18. The RAM 93 is provided with an image buffer for storing dot matrix data generated based on the stamp producing data.

[0039]

The CPU 91 controls the head driving circuit 96 and the motor driving circuit 97 based on the control program stored in the ROM 92 and the dot matrix data stored in the image buffer of the RAM 93. Thereby a desired stamp face image is printed by the thermal head 26 on the original film 23 or the cut sheet CS, and the original film 23 is used for engraving the face image on a stamp material.

[0040]

Referring now to FIGS. 5 through 17, stamp providing steps in the stamp providing system 1 according to the embodiment will be described. FIG. 5 is a main flowchart showing steps for providing a stamp according to this embodiment. FIG. 6 is a flowchart showing an e-mail editing process in the host computer 18. FIG. 7 is a flowchart showing a stamp type retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 9 is a flowchart showing a name retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 10 is a flowchart showing an address retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 11 is a flowchart showing a buffer laying-out subroutine in the e-mail editing process of FIG. 6.

[0041]

FIG. 12 shows an example of a brochure to be supplied previously to consumers. FIG. 13 shows an example of transmission data displayed on the display of the cellular phone. FIG. 14 shows a screen of mail editing software displayed on the display of the host computer 18. FIG. 15 shows a difference, in name and address buffer layouts, between the two types of stamp face designs. FIG. 16 shows an example of a stamp face

layout produced according to the embodiment. FIG. 17 is an external perspective view of a stamp produced according to the embodiment.

[0042]

First, in step S1, consumers 11a-11d operate the operation unit 72 of the respective cellular phones 12a-12d to create a data file including text data for a desired stamp to be produced. The data needs to be created following a predetermined rule to facilitate editing by the host computer 18. The rule may be to enter a plurality of entry items by delimiting each entry item by a predetermined symbol (for example, a semicolon (;)). It is preferable to previously supply a brochure 101 as shown in FIG. 12 to consumers to notify them of such a data creating rule.

[0043]

In this embodiment, two entry items, for example, a name and an address (of either a consumer who operates a cellular phone or another person) are provided, and these two entry items are engraved based on a design selected by the consumer from two designs featuring different cartoon characters. Thus, the data to be transmitted in this embodiment contains three entry items, namely, the stamp type, entry item 1 (for example, a name), and entry item 2 (for example, an address).

[0044]

Accordingly, in the brochure 101 shown in FIG. 12, the data file creating rule, two types of stamp face designs, an exemplary entry of data to be transmitted, a stamp face sample produced based on the transmitted data, and where to mail the data (e-mail address) are printed. The contents of the created data are stored in the RAM 63 as text code data and displayed, as shown in FIG. 13, on the display 73 of the cellular phone 12a.

[0045]

Then in step S2, the consumer 11a presses a data transmission button of the cellular phone 12a to transmit the data file created in step S1 to the host computer 18.
[0046]

At this time, when the cellular phones 12a-12d are located within a predetermined range from the host computer 18 (within approximately 10 m in the case of Bluetooth) (step S3: YES), control goes to step S4. On the other hand when the cellular phones 12a-12d are not located within the predetermined range from the host computer 18 (step S3: NO), control returns to S2. During creation of data in step S1, however, cellular phones are not necessarily required to be located within the predetermined range from the host computer 18, and consumers, if they have a cellular phone, can create data for ordering a desired stamp at anytime and anywhere.
[0047]

Then in step S4, the host computer 18 directly receives the data file transmitted from the cellular phones 12a-12d. The received data file is stored in the RAM 83 of the host computer 18. Each data file received by the host computer 18 preferably includes text code data identifying the consumer, such as the cellular phone number of a data sender, other than text code data representing the stamp type, name, and address entered in step S1. The host computer 18, if provided with the cellular phone number of a data sender, is enabled to perform data management using a unique cellular phone number and proceed with the subsequent processes smoothly. Also, this prevents a wrong stamp from being delivered later to the consumer. Consumer identifying information such as the cellular phone number may be entered in step S1 by the consumer.
[0048]

In step S4, a data file for acknowledging receipt of the data or for notifying of the time of completion of a

stamp estimated from the order situations may be directly returned to the cellular phones 12a-12d of the consumers 11a-11d. This allows the consumers 11a-11d to confirm whether the host computer 18 has received the data file they sent. If the host computer 18 fails to receive the data file they sent and no return data file is sent back to them, the consumers 11a-11d will resend the data file. In addition, a return data file for notifying of the estimated time of delivery obviates the need for the consumers 11a-11d to wait for the stamp 20 at the place of delivery.

[0049]

Then in step S5, the host computer 18 starts data editing software installed therein and selects data to edit from a list of received data files (FIG. 14).

[0050]

Then in step S6, the host computer 18 edits the data file selected in step S5, using the data editing software as described below. The data editing process, as shown in FIG. 6, includes five steps, namely, initialization (step S61), retrieval of stamp type (step S62), retrieval of name (step S63), retrieval of address (step S64), and buffer layout (step S65). These steps will be described with reference to FIGS. 7 through 11.

[0051]

In the initialization step (step S61), as shown in step S610 of FIG. 7, a read pointer stored in the RAM 83 of the host computer 18 for indicating a data read point is moved to the head of the body of the data to be edited.

[0052]

In the stamp type retrieving step (step S62), the contents of the stamp type buffer in the RAM 83 are cleared in step S620, as shown in FIG. 8. Then in step S621, a stamp type buffer write pointer for indicating a data write point in the stamp type buffer is initialized.

Then in step S622, the text code data at a point indicated by the read pointer is retrieved from the body of the data. Then it is determined, in step 623, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0053]

When the text code is indicative of a delimiting symbol (S623: YES), control goes to step S624 on the assumption that the stamp type data has already been retrieved. In step S624, it is determined whether the data retrieved and stored in the stamp type buffer is data representing the stamp type ("1" or "2" in this embodiment). As a result, when the data stored in the stamp type buffer is the data representing the stamp type (S624: YES), control goes to step S6241 on the assumption that the data representing the stamp type has been correctly retrieved, and the read pointer is incremented by one and this subroutine is completed. When the data stored in the stamp type buffer is not the data representing the stamp type (S624: NO), control goes to step S626, where error handling is performed.

[0054]

On the other hand, when the text code is not indicative of a delimiting symbol (S623: NO), control goes to step S625 on the assumption that the stamp type has not yet been retrieved. In step S625, it is determined whether the text code retrieved in step S622 is a code suffixed on the body of the mail and indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S622). When the text code is determined to be a code indicative of the end of the body of the mail (S625: YES), control goes to step S626, where error handling is performed.

[0055]

When the text code is determined not to be a code indicative of the end of the body of the data, (S625:

NO), the text data retrieved in step S622 is written into the stamp type buffer. Then in the step S628, the read pointer is incremented by one and, in step S629, the stamp type buffer write pointer is incremented by one. After that, control returns to step S622. By repeating these steps, text data representing the stamp type ("1" or "2" in this embodiment) is written into the stamp type buffer in the RAM 83 of the host computer 18.

[0056]

In the name retrieving step (step S63), the contents of the name buffer 0 in the RAM 83 are cleared in step S630, as shown in FIG. 9. Then in step S631, a name buffer 0 write pointer for indicating a data write point in the name buffer 0 is initialized. Then in step S632, the text code data at a point indicated by the read pointer is retrieved from the body of the data. Then it is determined, in step 633, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0057]

When the text code is indicative of a delimiting symbol (S633: YES), control goes to step S634 on the assumption that the name data has already been retrieved. In step S634, the read pointer is incremented by one and this subroutine is completed. On the other hand, when the text code is not indicative of a delimiting symbol (S633: NO), control goes to step S635 on the assumption that the name data has not yet been retrieved. In step S635, it is determined whether the text code retrieved in step S632 is a code suffixed on the body of the data and indicative of the end of the body of the data (or whether retrieval of the text code was failed in step S632). When the text code is determined to be a code indicative of the end of the body of the data (S635: YES), control goes to step S636, where error handling is performed.

[0058]

When the text code is determined not to be a code indicative of the end of the body of the data (S635: NO), the text data retrieved in step S632 is written into the name buffer 0 in step S637. Then in the step S638, the read pointer is incremented by one and, in step S639, the name buffer 0 write pointer is incremented by one. After that, control returns to step S632. By repeating these steps, text data representing the name desired by the consumer to be engraved is written into the name buffer 0 in the RAM 83 of the host computer 18.

[0059]

In the address retrieving step (step S64), the contents of the address buffer 0 in the RAM 83 are cleared in step S640, as shown in FIG. 10. Then in step S641, an address buffer 0 write pointer for indicating a data write point in the address buffer 0 is initialized. Then in step S642, the text code data at a point indicated by the read pointer is retrieved from the body of the data. Then it is determined, in step 634, whether the text code is a code suffixed on the body of the data and indicative of the end of the body of the data (or whether retrieval of the text code was failed in step S642). When the text code is determined to be a code indicative of the end of the body of the data (S643: YES), this subroutine is completed on the assumption that the address data has already been retrieved.

[0060]

When the text code is determined not to be a code indicative of the end of the body of the data (S643: NO), the text data retrieved in step S642 is written into the address buffer 0. Then in the step S644, the read pointer is incremented by one and, in step S646, the address buffer 0 write pointer is incremented by one. After that, control returns to step S642. By repeating these steps, text data representing the address desired

by the consumer to be engraved is written into the address buffer 0 in the RAM 83 of the host computer 18.
[0061]

Then in the buffer laying-out step (step S65), it is determined whether "1" or "2" is written into the stamp type buffer in the RAM 83 of the host computer 18. When the stamp type is "1" (S650: YES), the name buffer 1 and the address buffer 1 in the RAM 83 are cleared in step S651, and then the contents of the name buffer 0 are written into the name buffer 1 in step S652, and the contents of the address buffer 0 are written into the address buffer 1 in step S653. On the other hand, when the stamp type is "2" (S650: NO), the name buffer 2 and the address buffer 2 in the RAM 83 are cleared in step S654, and then the contents of the name buffer 0 are written into the name buffer 2 in step S655, and the contents of the address buffer 0 are written into the address buffer 2 in step S656. In this way, the buffers are laid out and the data editing step is completed.
[0062]

Two name buffers and two address buffers are used because, in this embodiment, the name and address engraving positions within the stamp face area are different, as shown in FIG. 15, depending on whether the stamp type is "1" or "2". When the stamp type is "1", a cartoon character is engraved near the left end of the stamp face area and the name and the address must be disposed away a certain distance from the left end. On the other hand, when the stamp type is "2", a cartoon character is engraved near the right end of the stamp face area and the name and the address must be disposed away a certain distance from the right end.
[0063]

Then control goes back to step S7 of FIG. 5, where the data edited in step S6 is supplied to the stamp producing device 19. More specifically, the contents of

the stamp type buffer, the contents of the name buffer 1 or 2, whichever is updated more recently, and the contents of the address buffer 1 or 2, whichever is updated more recently are transmitted to the stamp producing device 19 as the stamp producing data.

[0064]

The stamp producing device 19, in turn, receives the stamp producing data from the host computer 18 and stores it in the RAM 93. The CPU 91 generates dot matrix data for engraving the stamp face by referring to font data of letters and a cartoon character stored in the ROM 92, based on the stamp producing data stored in the RAM 93, and stores the dot matrix data in an image buffer in the RAM 93. Then the stamp 20 (FIG. 17) having a desired engraved stamp face as shown in FIG. 16 is produced by the thermal head 26 and the motors 98 driven based on the dot matrix data.

[0065]

Then in step S8, the stamp 20 is provided to the consumer cash on delivery. In this case, it is preferable that the consumer's cellular phone number is checked to avoid the mismatch between the stamp ordered from the consumer and the stamp to be delivered. It is more preferable that the stamp providing system 1 in this embodiment is provided with an automatic delivery device of produced stamps. An automatic delivery device ejects, in response to payment by the consumer of a prescribed stamp fee and an entry of the consumer's cellular phone number, a stamp corresponding to the entered phone number. Use of such a device can prevent a shop attendant from delivering a wrong stamp to the consumer due to a mistake in checking the phone number. The consumer may go to the installation site of the stamp producing device 19 to get the stamp 20, or may get, at home, the stamp 20 sent by mail.

[0066]

As described above, according to this embodiment, when consumers want to order the stamp 20 having a desired stamp face, all they have to do is to send desired data using the cellular phones 12a-12d, instead of taking the trouble to go to the installation site of the stamp producing device 19 and enter data to be engraved in the stamp or fill out an order form. Accordingly, the time and trouble taken by the consumers 11a-11d to order the stamp 20 can be substantially saved. Also, automatic production of stamps based on the data transmitted from the consumers 11a-11d substantially saves the stamp provider the trouble of entering the data filled in the order form.

[0067]

In this embodiment, because the range that permits communication between the cellular phones 12a-12d and the host computer 18 is limited to a relatively short range, operators of the cellular phones 12a-12d must actually go to a location close to the host computer 18 to order the stamp 20. Thus, consumers cannot get the specially designed stamp 20 produced by the stamp producing device 19 without going to a location close to the host computer 18. As compared with the case where data is sent, in the form of e-mail, from the cellular phones 12a-12d to the host computer 18 via a base station and a public line, the host computer 18 can receive orders only from consumers situated within an extremely narrow range. Accordingly, value can be added to the stamp 20 produced by the stamp producing device 19.

[0068]

Also, in this embodiment, because stamp producing data is generated and transmitted using the cellular phones 12a-12d, the consumers 11a-11d can order a stamp conveniently from various locations, at home and away from home, in their spare time.

[0069]

Also, in this embodiment, because a plurality of cellular phones 12a-12d can be identified using the phone numbers assigned thereto, the sender's cellular phone can be easily identified from the data received. Additionally, stamps can be produced based on personal information, such as the name and the address of the consumers 11a-11d.

[0070]

The data transmitted from the cellular phones 12a-12d bypasses a base station and a public line and is directly received by the host computer 18. Thus, there is no need to pay communication fees to a cellular phone service company and a public line company, and the cost of communication between the cellular phones 12a-12d and the host computer 18 can be significantly reduced.

[0071]

Although, in this embodiment, the stamp type together with the name and the address are sent to the host computer 18, only the name and the address may be sent to the host computer 18 and then the stamp type may be designated later when the consumer goes to the site where designs are shown. Such a method is effective when stamp design samples cannot be printed previously in the brochure 101 in FIG. 12 due to frequent stamp design changes. Previous transmission of all the data necessary for producing a stamp from the cellular phone, as shown in the embodiment, allows the consumer to get a stamp with less trouble and waiting time.

[0072]

While the invention has been described in connection with specific embodiment thereof, it should be understood that the invention is not limited to the above-described embodiment and various modifications can be made without departing from the scope of the invention as defined in the claims. For example, if a name card producing device, instead of the stamp producing device, is

connected to the host computer 18, a stamp providing system can be configured. Also, CDs (compact discs) in which voice is recorded can be provided using a voice data recorder, or stickers/labels with an image printed thereon can be provided using a device for producing a sticker/label upon receipt of image data. Also, in the above-described embodiment, the number of entry items and the types of the stamp designs can be arbitrarily changed, and wireless data transmission techniques (preferably short-range wireless data transmission techniques) other than Bluetooth can be used.

[0073]

[Effect of the Invention]

As described above, according to claims 1 and 3, the time and trouble taken by the consumer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the consumer substantially saves an output provider the trouble of entering the data. Because the output producing data is generated and transmitted using a wireless data transmitter, the consumer can order an output conveniently from various locations, at home and away from home, in his/her spare time.

[0074]

The operator of the wireless data transmitter must actually go to a location close to the wireless data receiver to order an output, and thus value can be added to the output produced by the output producing device. In addition, because the wireless data receiver directly receives the data transmitted from the wireless data transmitter, the cost of communication between the wireless data transmitter and the wireless data receiver can be significantly reduced.

[Brief Description of the Drawings]

[FIG. 1]

FIG. 1 is a schematic diagram showing a configuration of a stamp providing system according to an embodiment of the invention.

[FIG. 2]

FIG. 2 is a general perspective view of a stamp producing device shown in FIG. 1.

[FIG. 3]

FIG. 3 is a general cross-sectional view of the stamp producing device shown in FIG. 1.

[FIG. 4]

FIG. 4 is a block diagram showing a control system of the stamp providing system according to the embodiment of the invention.

[FIG. 5]

FIG. 5 is a main flowchart showing stamp providing steps in the embodiment of the invention.

[FIG. 6]

FIG. 6 is a flowchart showing a data editing process in FIG. 5 executed by a host computer.

[FIG. 7]

FIG. 7 is a flowchart of an initialization subroutine in the data editing process of FIG. 6.

[FIG. 8]

FIG. 8 is a flowchart of a stamp type retrieving subroutine in the data editing process of FIG. 6.

[FIG. 9]

FIG. 9 is a flowchart of a name retrieving subroutine in the data editing process of FIG. 6.

[FIG. 10]

FIG. 10 is a flowchart of an address retrieving subroutine in the data editing process of FIG. 6.

[FIG. 11]

FIG. 11 is a flowchart of a buffer laying-out subroutine in the data editing process of FIG. 6.

[FIG. 12]

FIG. 12 shows an example of a brochure to be previously supplied to consumers in the embodiment of the invention.

[FIG. 13]

FIG. 13 shows an example of transmission data displayed on a display of a cellular phone.

[FIG. 14]

FIG. 14 shows a screen of mail editing software displayed on a display of the host computer.

[FIG. 15]

FIG. 15 shows a difference, in name and address buffer layouts, between two types of stamp face designs.

[FIG. 16]

FIG. 16 shows an example of a stamp face layout produced according to the embodiment of the invention.

[FIG. 17]

FIG. 17 is an external perspective view of a stamp produced according to the embodiment of the invention.

[Description of the Reference Numerals]

- 1 stamp providing system
- 11a-11d customers
- 12a-12d cellular phones
- 18 host computer
- 19 stamp producing device
- 20 stamp

[Title of the Document] Drawings

[FIG. 1]

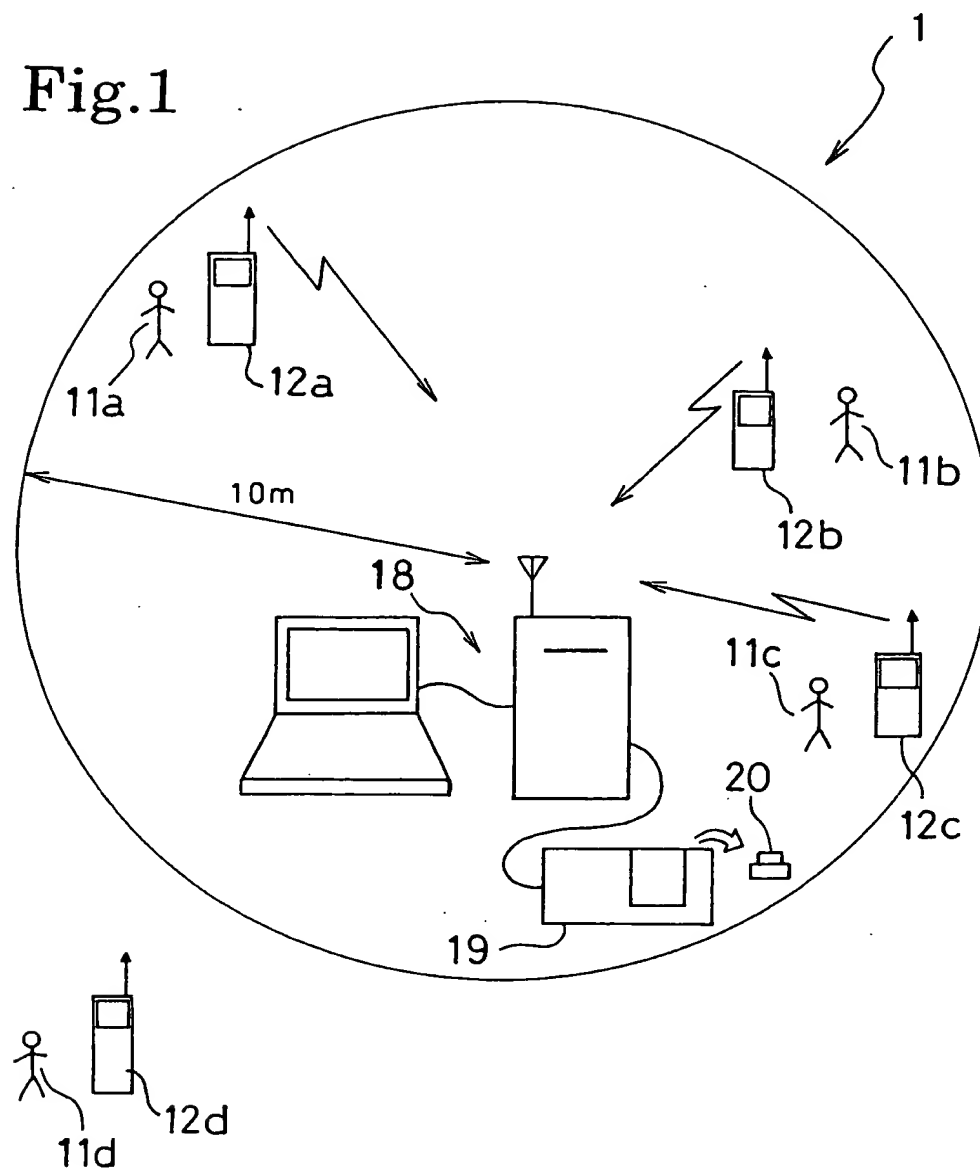
[Document Name] Abstract
[Abstract]

[Problem to be Solved] To enable customers to order a tangible output, such as a name card and a stamp, at less expense in time and trouble.

[Solution] Customers 11a-11d operate their own cellular phones 12a-12d to send data containing information to be engraved in a stamp to a host computer 18. The host computer 18 edits the data and send stamp producing data to a stamp producing device 19. The stamp producing device 19 produces a stamp 20 based on the received data.

[Selected Figure] FIG. 1

Fig.1



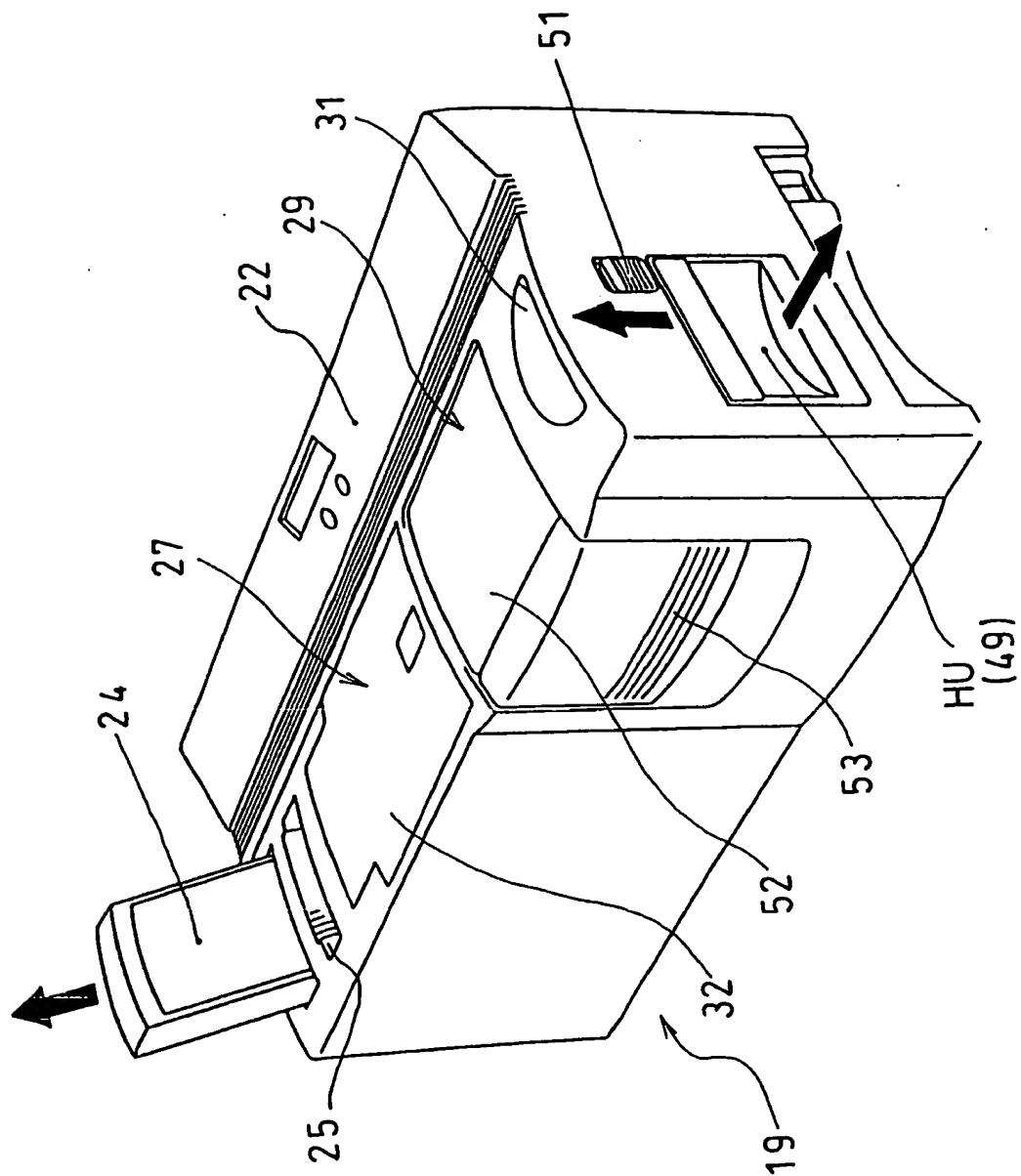


Fig. 2

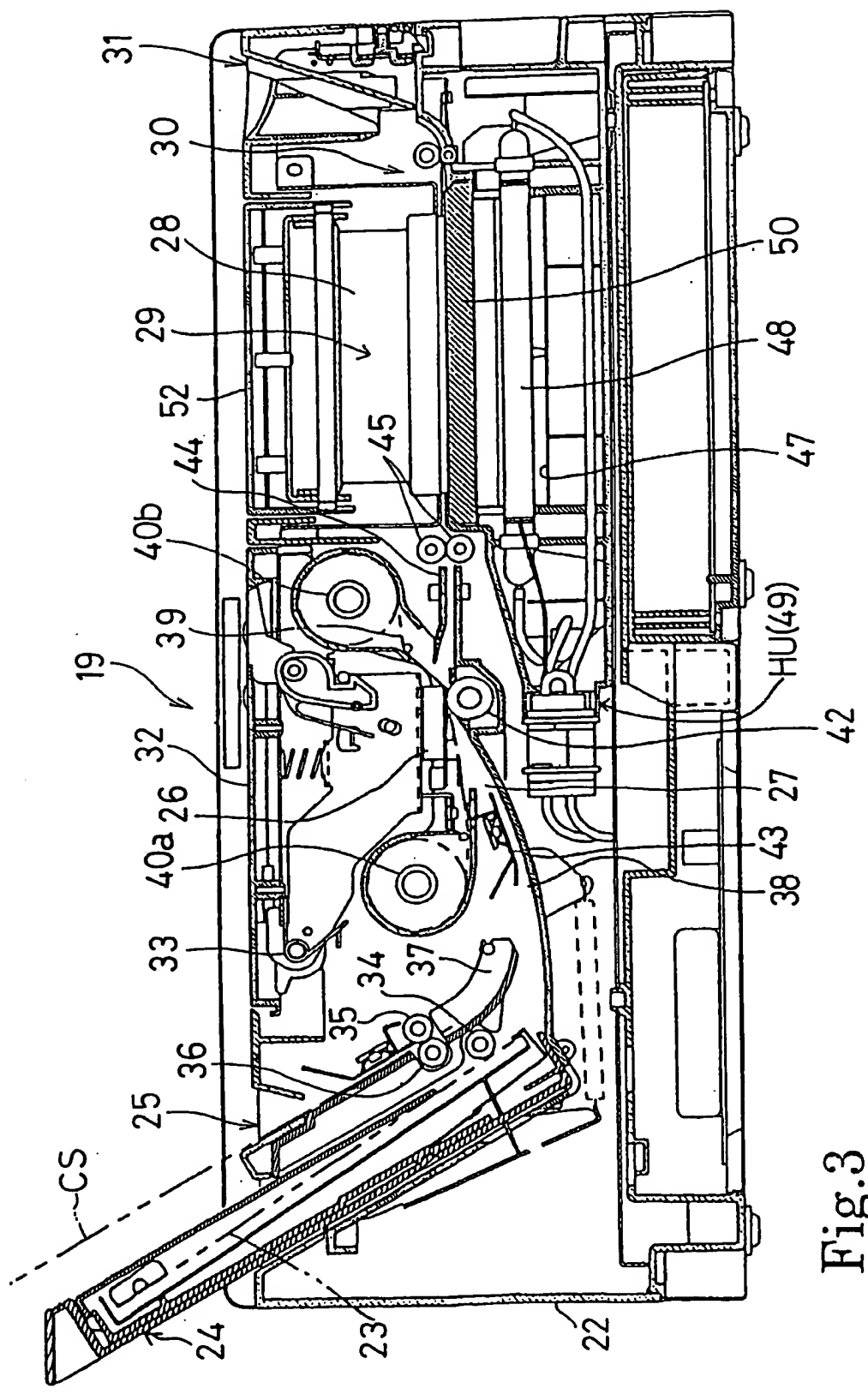


Fig.4

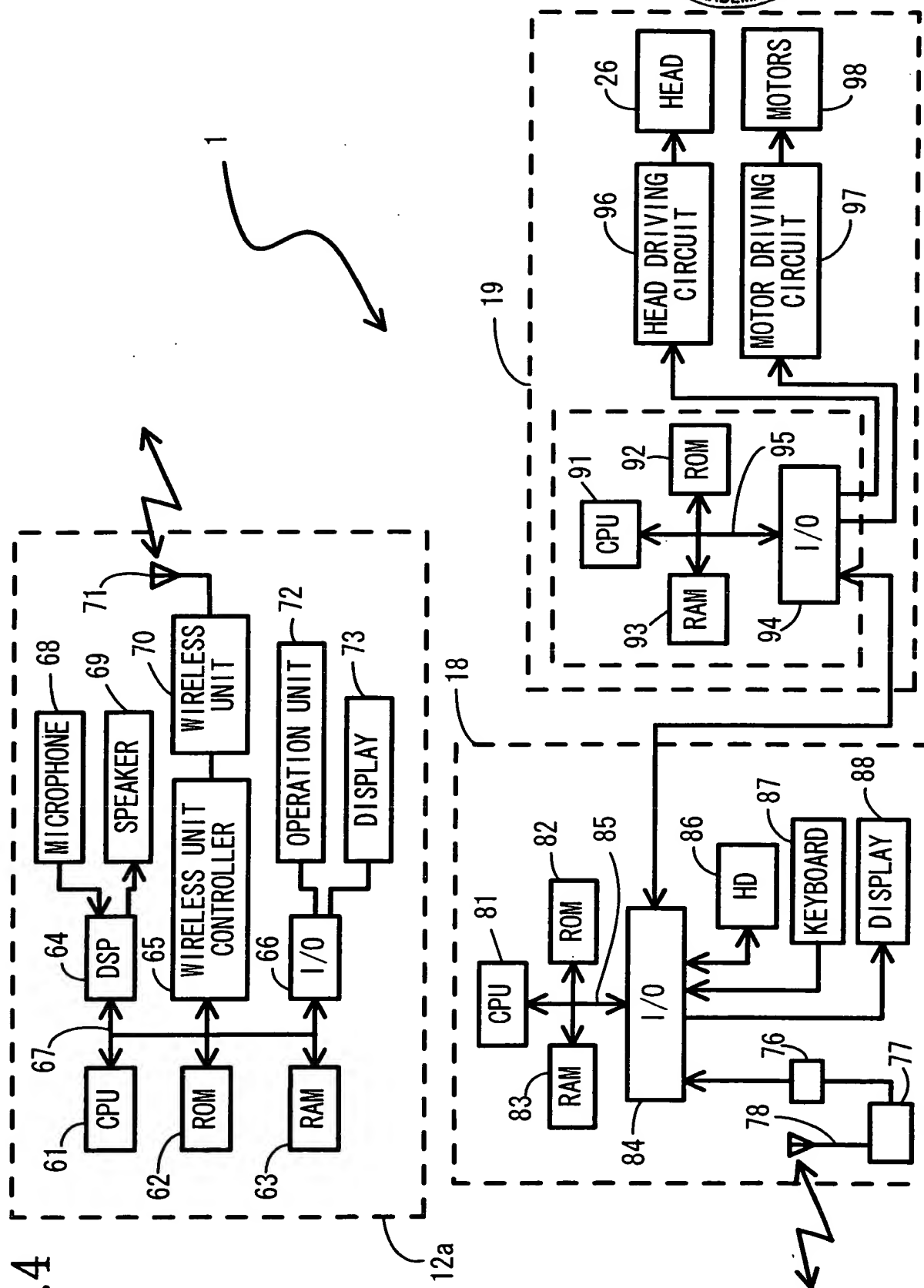


Fig.5

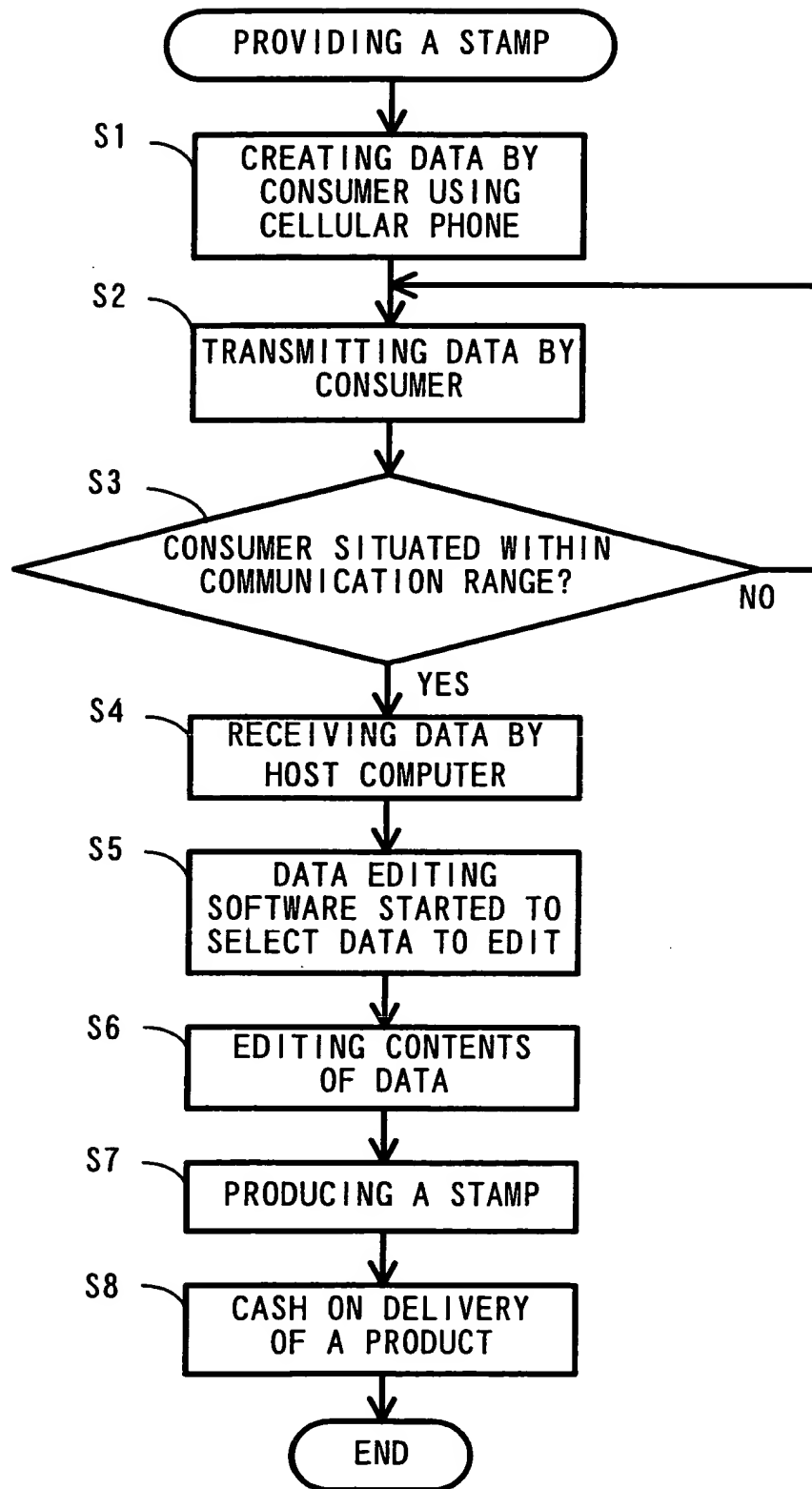


Fig.6

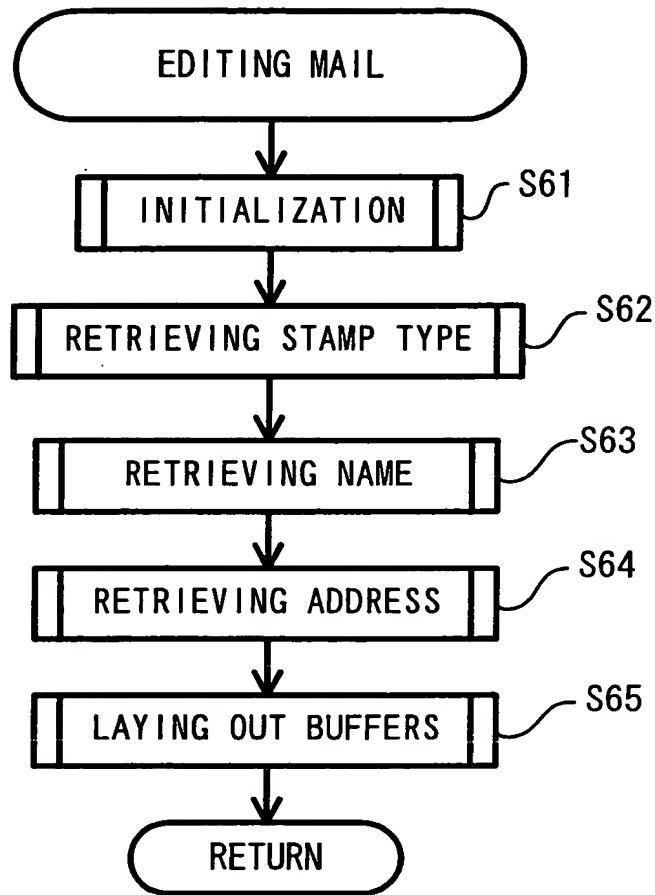


Fig.7

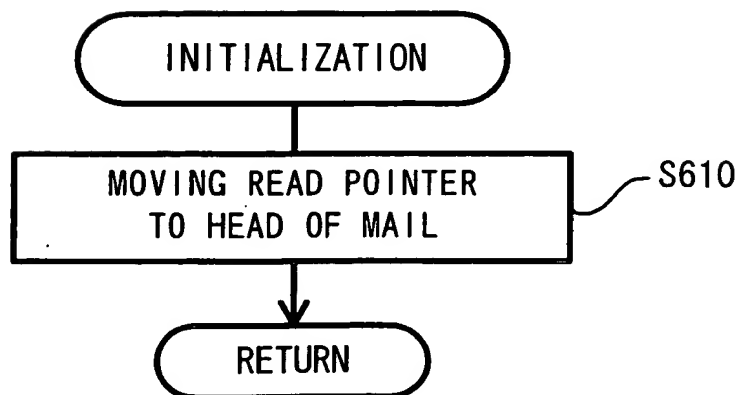


Fig. 8

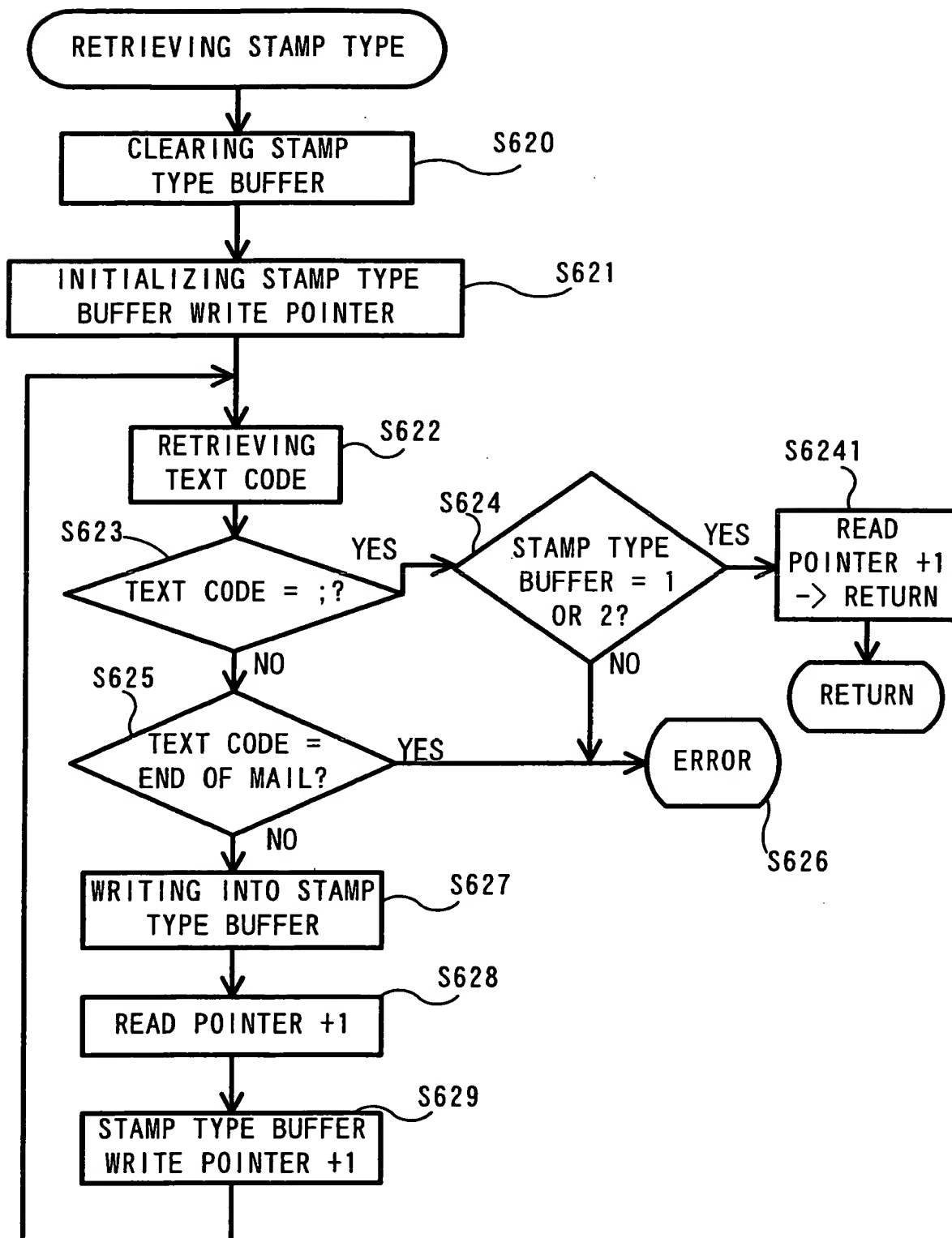


Fig. 9

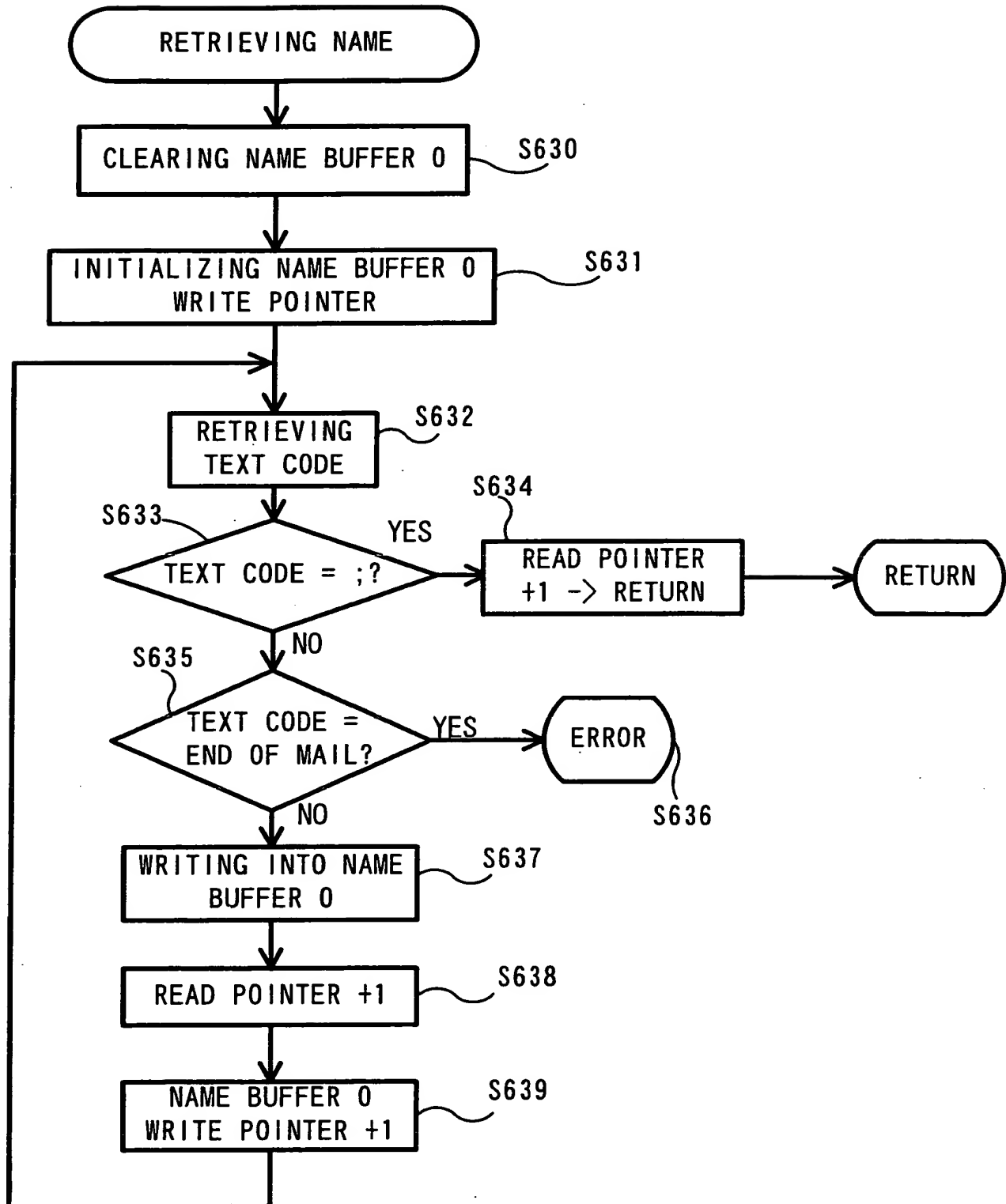


Fig.10

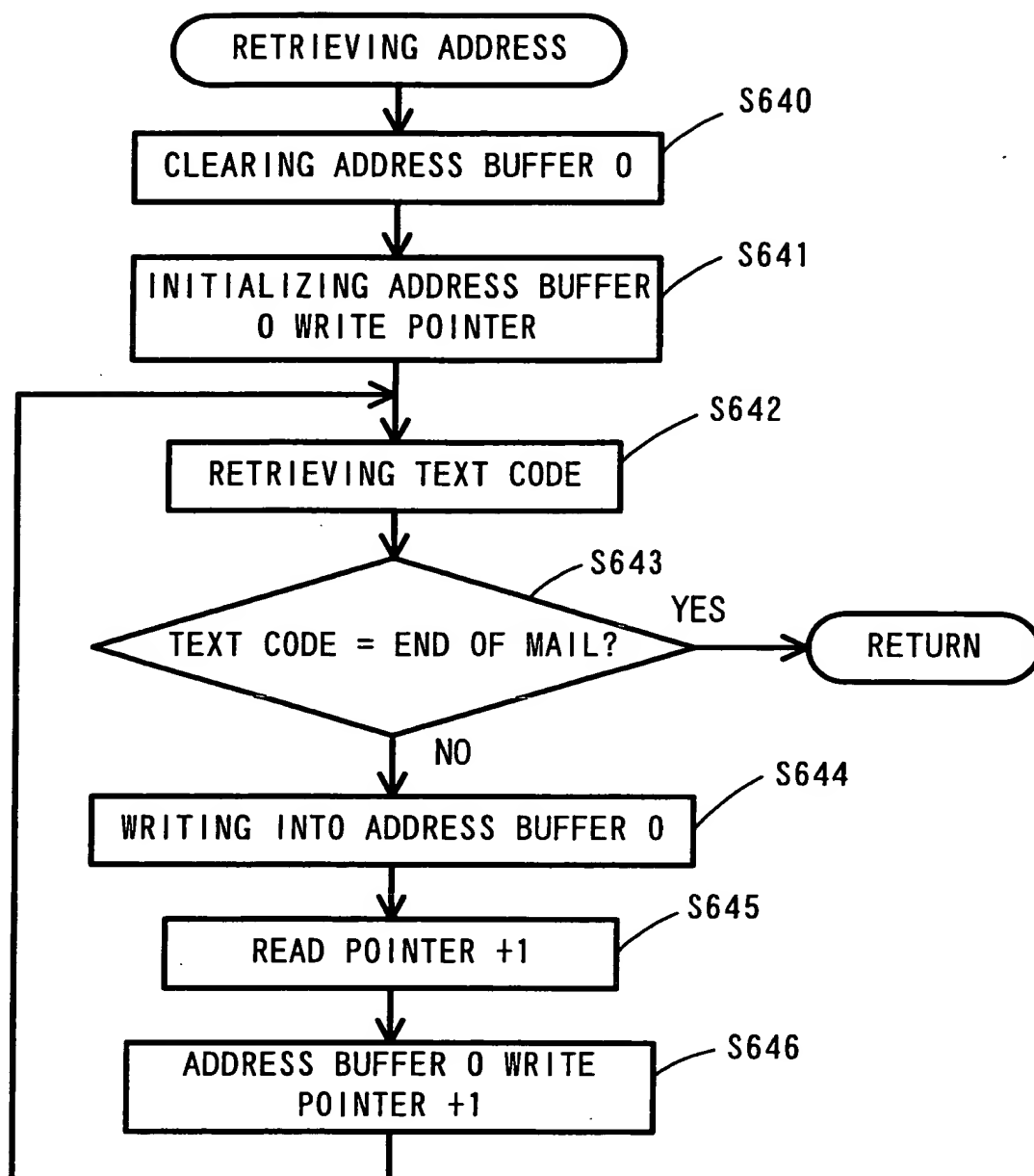


Fig.11

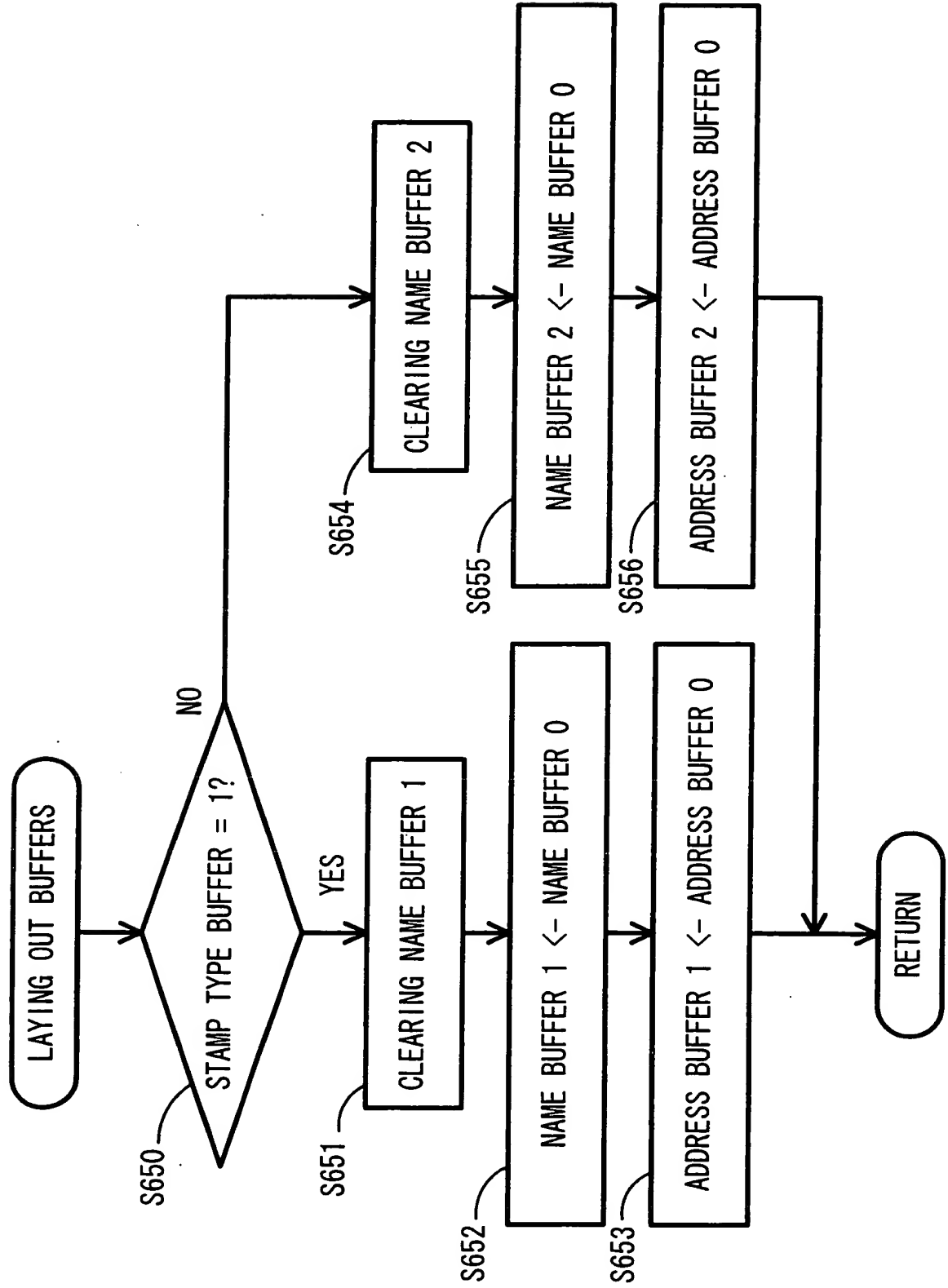


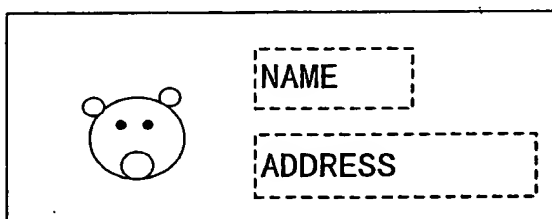
Fig. 12

101

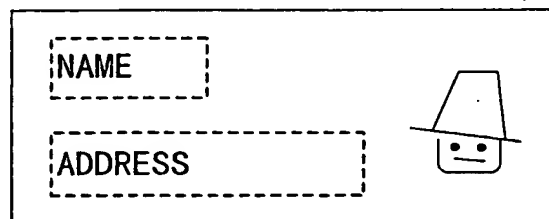
HOW TO WRITE MAIL TO ORDER A STAMP

Enter the stamp type, name, and address in this order by delimiting each entry item by semicolon.

STAMP 1




STAMP 2



EXAMPLE OF ENTRY:

1; TARO SUZUKI;
1-2-3 XX,
^^-KU, NAGOYA

If mailed,



TARO SUZUKI
1-2-3 XX, ^^ -KU, NAGOYA

Your stamp will be:

Please send your mail to: 090-1234-5678

Fig. 13

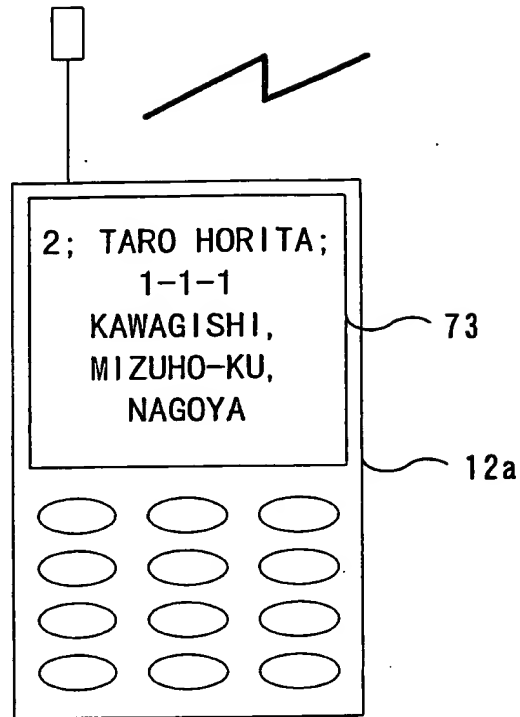


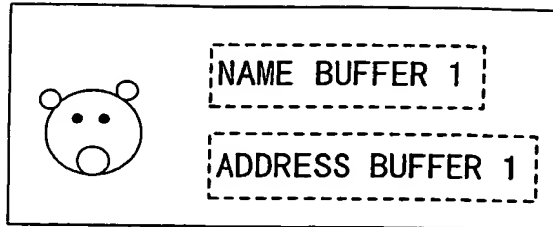
Fig. 14

MAIL EDITING SOFTWARE		
No.	TITLE	TEL
1	STAMP ORDER	090-7777-8888
2		
3		
4		
5		



Fig. 15

STAMP 1



STAMP 2

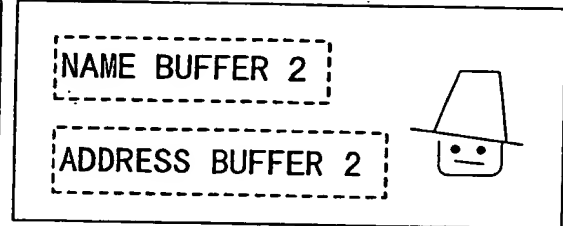


Fig. 16

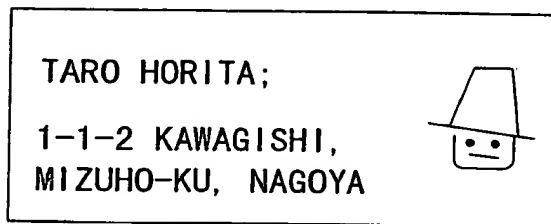


Fig. 17

